

ABSTRACT OF THE DISCLOSURE

A tool with conformal cooling channels is made by diffusion bonding several tool sections together, which enables the cooling channels to be made in virtually any desired configuration. Once the desired configuration of the cooling channels is determined, a block of tool material in an annealed state is cut into layers. Grooves are formed in the surfaces of the layers or holes are formed through the layers such that the grooves and holes will form the cooling channels when the layers are reconstituted into the block. Indexing holes or equivalent structure fixedly locates adjacent layers when they are reconstituted, and the grooves and holes are precisely located relative to the indexing holes, thus ensuring that the grooves and holes in facing surfaces of the layers form the desired channels. The layers are then diffusion bonded by pressing them together at an elevated temperature.